

PREVENTION OF SMOKE, WITH A SAVING OF FUEL

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With the view of affording additional proof of the efficacy of Mr. C.W. Williams's Patent Argand Furnace, for the prevention of smoke, accompanied by a saving in the consumption of fuel, RETURNS have been obtained to a series of QUESTIONS, addressed to the commanders and engineers of steam-vessels, to which the apparatus has been applied. These returns show that the advantages are greater in some vessels than in others, which difference is chiefly attributable to the construction of their boilers. In marine, as well as land engine-boilers, the arrangement of the flues frequently renders them incapable of improvement; such arrangements not only injuring the draught, but tending to obstruct, rather than aid, the natural and chemical process of the combustion of the gaseous matter of the coal. In some of the boilers referred to, there appears to be a considerable saving of fuel where there had been a sufficiency of steam ; while, in others, the advantage of the apparatus is shown by obtaining a better supply of steam from the same quantity of fuel—in all, however, the great evil of smoke is avoided. Where furnaces are properly attended to, by having the bars kept thickly and uniformly covered with fuel, smoke will be prevented, and more heat generated; any deviation from this, by having the fire-bars too long,—by improperly fouling the furnace, or allowing the fuel to burn in holes, or irregularity—or by heaping the fresh coals in front, and allowing the back part of the bars to be uncovered, or without the full supply of fuel—will be attended either with the generation of visible smoke, or the escape of the gases unburnt, though it may prevent the formation of soot; what is called the "combustion of smoke" is not unfrequently the effect of the mismanagement of the fuel, by which its inflammable gases pass away in an invisible form. Smoke is the result of the imperfect process of combustion of the fuel, by which its inflammable gases pass away in an invisible form. It is here to be noted, that the absence of visible black smoke is no test of the value performed in the same furnace, the "combustion of smoke" is hence a chemical absurdity. Dr. Ure, writing to Mr. Williams, says, "I quite agree with you in considering the prevention of smoke to be the true mode of curing the nuisance; for, when the carbonaceous particles become deposited, it is impossible effectually to burn them, so as to destroy the smoke which they occasion, or rather condense." Professor Brande says, "As to smoke, if you would let it."—Since the following returns were made, we are informed that the Queen Victoria (Liverpool), and the Branda

Names of Steamers.	How long since the apparatus was introduced, and how long since it was improved, and how long since it was used?	Did your furnace make much smoke before they were altered?	Do they make less smoke since they were altered?	Had you a sufficient supply of steam before the furnaces were altered?	Have you as good or better command of steam since the alteration?	Does the use of this apparatus effect any saving of fuel, and to what extent?
BRENTIA.	Twelve months.	A great deal of smoke.	Much less smoke, scarcely any to be perceived.	Yes—but not too much.	Yes—a great deal better, and was enabled to blow off copiously.	On the average of trips we save at least 3 cwt. per hour.
LIVERPOOL.	Seven months.	Not much smoke.	Since the alteration there is less smoke than before.	Yes.	I should say a better command of steam, though we have new cylinders of larger dimensions.	Consumption much about the same as before, notwithstanding about sixteen horses power added, and an increase of two revolutions.
GLoucester.	12th April, 1841—say two years.	Yes—a very thick black smoke.	No smoke is now made, except when fire is first lighted, or when the boiler is being heated.	No—scarcely enough of steam.	We have now an abundant supply of steam.	Consumption of fuel the same as before.
GLoucester.	Seven months.	A great quantity of smoke was made previously.	No smoke is now made after the fire is put in good order, a light smoke when men are firing.	Rather insufficient in steam.	We have now a very plentiful supply of steam.	About four tons of fuel less is now consumed in the trip than before the alteration.
GLoucester.	Two months.	Yes—we smoked very much.	Only when fire is first lighted, or with bad coal.	No—we had but little, except with very good coal—then with great exertion we worked to full power.	We are convinced we have, and particularly with good coal.	Yes—this is experienced when burning good coal, but not when with a bad quality.
GLoucester.	13th Nov., 1842.	Made much smoke with the former boilers.	Very little smoke now.	The apparatus was attached when the present boilers were put in.	Sufficient supply of steam.	Apparatus always applied to these boilers.
GLoucester.	Always in these boilers.	Smoked much with former boilers.	We have made very little smoke since the commencement, with present boilers.	Apparatus always attached to present boilers, plenty of steam at all times.	Apparatus always attached—plenty of steam at all times.	Apparatus always attached, therefore cannot say.
GLoucester.	Nine months.	A great quantity of dense black smoke.	They now make scarcely any smoke after the fire is well lighted.	We had sufficient before the alteration.	We have quite sufficient as we had before.	Without the air pipes we made— 16 voyages hours 27 Coal consumed tons 171 With the air pipes we made 16 voyages hrs. 27 Coal consumed tons 122
GLoucester.	More than two years.	Going before the wind they smoked considerably—at other times not so much.	No smoke except when firing up or making the fire, and then only a short time.	We always had a good command of steam.	We have better command of steam; if the coal is good we can make any quantity of steam with the greatest ease.	Saving tons 4 To the best of our judgment about 4 cwt. per hour.
GLoucester.	One month.	At times they smoked.	No black smoke now appears while under way, but sometimes a little grey smoke a few seconds after firing.	I have always a sufficient supply of steam.	All times sufficient command, and are now enabled constantly to blow off steam.	We save about 1 cwt. to 1½ cwt. per hour.
GLoucester.	Nine months.	A dense black smoke.	Much less smoke.	No—we had not sufficient steam.	Very much better.	From the nature of our service, I cannot say.
GLoucester.	Twenty months.	Yes—we smoked considerably, as much as any vessel of our class.	After all is warmed then we do not smoke, only when firing up or making the fire, and then only a slight volume for a few seconds.	We were always pretty well for steam when using good coal.	We consider that we have a much better supply with the air apparatus—there is no question of it.	We think we are saving from 3 to 4 cwt. per hour. For many voyages our consumption averages about 1 cwt. per hour.—It was 2½ cwt. previously.
GLoucester.	Put in on arrival at Southampton.	Voyage from Liverpool to Southampton, smoked much, from both furnaces.	Smoke is now seldom or never seen.	Not over abundant.	Sufficient steam now.	The air boxes are a great saving, both in fuel and supporting the bridge.
GLoucester.	Four months.	A great quantity of smoke.	Smoke nearly done away with, except at firing, and when raising steam from cold water.	Sufficient.	Much about the same.	From 15 to 20 per cent. of fuel saved.
GLoucester.	Nine months.	A great deal of smoke.	No smoke now except when the fire is lighted.	Not half enough.	Much better.	Yes—at least one-third.

WEEKLY.—My letter to you, in the *Mining Journal* of February 11, acquainted you with my reasons for addressing you through this confidential and respectable medium. It mentioned that I had recalled a letter, on an occasion which I then explained (and which appeared in the *Mining Journal* of January 14 and 20), from the office of the *Civil Engineer's Journal*. This was taken in the next (February) Number, but in the succeeding (March) Number, it was notified that, in consequence of my having withdrawn a letter from the office, my communications could not appear in the *Civil Engineer's Journal*. It is worthy of remark, that in the interval between the appearance of the February and March Numbers of the *Engineers' Journal*, a letter to you was given, as above stated, in the *Mining Journal* of 11th January. Hence it would seem, it was the letter I had the honor of withdrawing from his office, that brought him to the determination of printing that, as far as it was concerned, as little as possible of anything might be said, should be said before you. The whole matter appears to be a satisfactory attempt at turning the tables on me, and is remarkable for its fairness and being quite fit-timed.

My former letter to you, in this *Journal*, was in reply to some Editorial remarks in the *Civil Engineer* for February, which, though headed with the title of "The Velocity of Water in Vertical Pipes," were immediately devoted to my system of hydraulic propulsion—to wit, they constituted a recapitulation of your Editor's review of the hydraulic railway in a former Number. In April Number your Editor again took up the subject, but as he is, on the long run, proved a complete enemy to his subject, and as they deserve no better title—it would have been absurd for me to do so, another acknowledgment has again solicited attention to the same of fairness and candor, I beg to offer—and I trust in a similar manner to my remarks on his communications; for no article based on anything like the appearance of actual data, may be offered on the velocity of water through vertical pipes, without having, in way or another, immediately recourse to the hydraulic railway, whether the same be expressed or not.

Consequently, "I. V.—a." In which I am now referring, is the *Civil Engineer's Journal* for this month, since his communication with a conclusion which he believes has been arrived at by the aid of good data, which he uses in those words—"The velocity of water, descending the behavior of water that has (nature that nature), is equal to two-thirds of the velocity due to a body, after it has fallen through a distance, is less equal to the length of the pipe."—I am, expressing, for a few moments, intention to be correct, but as nature is the law which he has adopted, it is not in the case of hydraulic propulsion. The proposition is unassailable, it is evident that the operation of the law will not be in question here, but will extend to any practical attitude (as in the *Mining Journal* of February 11th, seventh paragraph). It will, in fact, give no actual velocity, as due to the vertical column, one third of the velocity due to it, if conducted—that is, if the whole column is in motion. In answer, in any manner, effect the final velocity, we search below the actual, if this latter could be ever called into play could it, in any case, effect the system, whenever I had any other engine, or if I worked at the foot of a vertical column, by the same means, in either case, the action proceeds on the water descending and ascending, without being acted, in the first instance, by the velocity due to a vertical column, of the whole of it could be obtained from the very first authorities, I find the initial velocity due to such a column of water as I showed, when commencing supply, is nearly stationary in that due to the vertical column, after that difference made for the friction, which is mentioned as due, whether actually the pipe occupying the channeling work of water. Now, two-thirds

of this velocity will be equal to a speed of nearly forty-six miles an hour, and I can only say further on this subject, that my ambition, for the present, does not aspire to a speed of more than three quarters of that.

I have thus far discussed the subject with "I. V.—a." on his own ground, as it appears to be the most easy method of settling this question at rest, as settling powerful and efficient application in practice of hydraulic propulsion. But while I admit that his theories are impractical, I beg to submit to the candid and unbiased consideration of "I. V.—a." the three following elements in the pamphlet. The formula in *Truitt's Treatise on Hydraulics*, from which, I deduce the velocity due to the fall of a vertical column of water to piping of one foot in diameter, and 100 feet high, is derived from the facts published by the very first authorities in hydraulics; that this velocity is equivalent to the friction due to the pipe; and that these first authorities, have used numerous experiments in piping, though generally on a small scale, to with natural velocity of water in piping. 2. Water, which is common purveyor, which may be compared to that of a billiard ball, the powerful resistance of which from a pavement is well known. The sharp spring immediately of any pipe, whether large or small, converting water from any altitude. Hence, when a vertical column of water is set free, this spring makes it burst off at once with the velocity due to its altitude. It might possibly be objected that it would re-act through the column, and be partly lost on its upper surface, but there the superimposed column of the air meets it; and it is rigid and strong. The inertia of the liquid column also assists in forming a disturbance of the column of air above and below a vertical pipe discharging water, require very careful consideration. That above the water is constantly pressing with undiminished and undeviated energy upon the surface; in fact, it is driving, or squeezing, the water out of the supply reservoir; that below the vertical column, is, by the discharge of the water, seen down along with it; some throws into a rapid spiral current circling down in the column, and leaves a considerable column of pressure in favor of the superimposed column of air, and therefore, in favor of the equality of the discharges, these circumstances need to be taken into account, and I am sure that the first of the communication, however bright, that the data of velocity are to be established; but by most carefully gathering together all the facts bearing on the point under discussion, and with equal care collimating, if possible, their respective values.

I again, gentlemen, submit your individual and personal, careful consideration of the hydraulic railway, and I beg to assure you, that nothing will, at any time, afford me greater pleasure than to give any of you any information which it is in my power to supply on the subject of this invention; which I trust, will answer, or rather, prove of great benefit to society.

I remain, gentlemen, yours, respectfully,
J. G. SERRAVALLO.

Rich. May 2.

New Green-Spring House.—We have authority to state that a new riveted steel tank will immediately be formed in this town, in the place of the old one (which tank) these details of the engine required, being already estimated. We are informed that the pressure will be found next week, and that the capital is to be 1,000,000. It is 1,000 shares of 100 each. A list for the payment of subscriptions, see at the *Unionist* Office, in the City.

NEW COAL-FIRE AT WHITEHAVEN.—It appears that a new coal-pit, about 100 millions deep, was formally opened on Thursday week, near the town of Whitehaven, and has been named "The Duke of Wellington No. 1."

early a point as possible. The other parties, whose names are in a state for argument, have, with one exception, consented to abide the decision in Mr. Goldsmith's favor.

Next came the report of the committee of proprietors, in the month of September, 1884, the directors have been actively looking to the matter of winding up the affairs of the company, by a sale of its property, but from the state of the iron trade, this was then, and has ever since been, impracticable. The directors, participating in the speculations of those late informed on the subject, had hoped for such an improvement as would give a marketable value to the property, and then enable them to carry out their intention—but in this they have been altogether disappointed, the price of iron having continued to fall to a degree quite unprecedented. The directors have, in consequence, been attended with a serious loss, in addition to the heavy payments the company have to make for interest. Under such circumstances, it has appeared to the directors absolutely necessary that decided measures should be taken to meet the liabilities of the company, and then, at all events, put a stop to the heavy drain for interest. It may be deemed whether, in the present state of the trade, the property of the company would find a purchaser on any terms; but it is certain that a forced sale, at such a time, would not yield a sum sufficient to discharge the debts of the company, without further and very heavy calls upon the proprietors. It is, therefore, quite obvious that the company cannot proceed to sell, without making some other provision for payment of the debts—namely, as they were, by the purchase of the property in question. The directors have accordingly decided to avoid granting further to the proprietors, but the claims of the creditors are partitioned to all other considerations. The question is one in which all have the same interest; for, whatever dividend may exist among different classes of shareholders, all are alike bound to honor, so as to law, to the creditors of the company, for the full payment of its debts. Under these circumstances, the directors have been in active consultation with the leading shareholders upon various plans for discharging the debts of the company, and they had hoped to be able to do so in this meeting a scheme for that purpose, they regret, however, that difficulties have occurred to prevent them from doing so this day; they will not, therefore, enter now into details, but fully alive to the importance of the question, and the anxiety it must occasion to the shareholders, they intend to propose that a special general meeting be held on some day, to be fixed by the directors, not later than the 1st July next, to receive a report on the subject; and, in order to facilitate that object, it is proposed that the following proprietors be appointed as a special committee, to consult and arrange with the directors, each of whom may appear to them best to be assigned, viz.—J. S. Brownrigg, Esq., R. S. Chapman, Esq., R. S. Hume, Esq., R. S. Hume, Esq., J. S. Smith, Esq., and the members of the company, viz.—C. L. Kerr, Esq., J. S. Hume, Esq., and J. S. Smith, Esq.

The directors have already notified the fact, that, since the judgment of the Court of Queen's Bench in the action against Mr. Goldsmith, a very large number of shareholders have paid up their calls in arrears, and they confidently expect that this example will be generally followed; but it must be obvious that, should a dissolution of the company take place, those who have not paid their calls would be called on by a very onerous proceeding to pay the debts of the company; and the directors assure the shareholders, that in any scheme they may suggest for the liquidation of the company's engagements, they will always contemplate, as part of the plan, the means of enforcing a reliable contribution to the company's liabilities by all the solvent shareholders.

Matthew Harrison, Alexander Wilson, and George Forster Barclay, Esqs., were re-elected directors of the company, and Thomas Mason, Esq., was re-elected an auditor.

The Chairman then observed, that they would now come to the main business, which would be followed by a resolution, which he should have the honor to propose, for the appointment of a committee of proprietors. He hoped they would think this the wisest course that could be adopted, in the present state of their affairs, and, from the manner in which the report had been drawn up, he hoped no one would think there was anything like concealment, or a desire to withhold information, on the part of the directors. He sincerely regretted the further losses which they had incurred, the principal cause of which was the continued and great depression in the price of iron, which, in 1856, was 11s. 5s. 6d. per ton, and had gradually dwindled down to 6s. 3d. in the first half-year of 1884, to 5s. 3d. 6d. per ton, and was, at the present time, only 4s. 12s. per ton. Although considerable losses had occurred at some of the works, he would refer to those of Staffordshire, where such was not the case. He regretted there appeared to be no probability of an immediate alteration in trade; and, under that impression, the directors had reduced all charges, salaries, and wages, as low as they were capable of being reduced. The Chairman alluded, with regret, to the subject of law proceedings, and quoted, from the Mining Journal, the judgment of the Court of Queen's Bench, in favor of the company, and hoped, as it was so clear, that the dissenting proprietors would see the necessity of paying up their calls, with a view to the more speedy settlement of their affairs. To show the value of their property, in the year 1856, after ten years of litigation, the price of their shares in the market was 46s. or 47s., but afterwards came the adverse decision of the House, which brought on all their difficulties. That decision made a difference in money to the company of no less than 830,000s. The Chairman said, with regard to the position of the calls, he thought it right that the proprietors should know, that the shares which had been paid upon to the extent of 75s. each were 12,400 shares—the shares which were in default were 6354. Some had paid only 50s., some considerably more; but, without entering into them, there had been paid upon, in full, 12,400 shares.

Mr. WATKINSON wished to know the deficiency.—The Chairman said about 99,000s. was the amount remaining unpaid upon the calls.

A PROPRIETOR wished to know if there was any truth in a statement of a deed giving the round of the shareholders for raising 60,000s. upon security of some part of the company's property, for paying off some engagements of the company.—The Chairman assured the proprietor he knew nothing whatever of such a transaction.

Major BROWNKNEVE said he should not object to the resolution of the chairman; but, instead of a special meeting, to be convened on the day mentioned, he would propose that this meeting should be adjourned to that day, because, if they had a special one, it would be merely for a specific purpose, and they would not be at liberty to enter into a discussion, generally, of the situation in which the company was placed, which was his reason for wishing an adjournment in preference.—The Chairman thought it would be impossible that any decision could be come to at once at the next meeting, looking at the importance of the subject; and that another meeting must be held, to take into consideration, and endorse, what the committee should recommend.

Mr. BROWNKNEVE said he had, at the last annual meeting, exhibited a similar resolution, and reported it had not been carried into operation before, but he knew it had been found impracticable; and, certainly, there was no want of action respecting it on the part of the directors. The first object was to get rid of the liabilities, and then to take measures for winding up the company, and that being the object of the resolution, he should give it his support.—Mr. CHAIRMAN made some observations, dealing with the complaint of difficulties being thrown in the way of the company by the sale of the United Shareholders, and especially by the non-payment of their calls. He considered that, as honest men, they were bound to contribute their fair proportion towards the payment of the company's engagements.

Mr. WATKINSON wished to know why the shares were called to 100s., and if, in doing so, counsel's opinion had been taken.—The Chairman said it was somewhat years ago when that resolution was passed, when it was not considered necessary to have so large a capital, as it was believed that the dividend with Mr. Atwood would be an aim, and the 100s. shares were authorized for 140s. shares. The resolution was the act of the proprietors, at public meeting; but he was not a director previously to that period, and he did not know if counsel's opinion was even then taken summary under those circumstances. The same body that could reduce the shares, could, of course, raise them to 100s. (No, no, from Mr. Jackson.)—Mr. BROWNKNEVE said the amount of the liabilities had nothing to do with the question. If he had only bought them as 140s. shares, and the company's liabilities reduced to a sum to raise them to 100s., he would pay, as they were only a partnership, and not under a charter, and, therefore, each one was individually liable.

Major BROWNKNEVE said he came to consequence of the remarks of Mr. Chapman, who alluded to the United Shareholders wishing to get rid of it by some quiet arrangement, and he would tell him that the only object of their movement was, then, the directors should not quit or about the United Shareholders. The result of what they had done, showed that you could not get rid of them, and that the directors could not do so as a matter of course. After making some observations with regard to the other plans mentioned to be taken, the proposal to Mr. Atwood and other points, the subject concluded by an address made to the company brought to a conclusion as quickly as possible.—Mr. BROWNKNEVE congratulated the result of the meeting, and said that he had been told, by what he would call, the incompetency of the directors. They had, he said, been prevented, two years ago, a profit of 12,000s. a year, but there had been a loss of 10,000s. last year, instead of a profit, which was, in his opinion, a loss of 20,000s. The meeting proceeded to consider his speech by voting that the same should be printed, and sent round to each proprietor before the next meeting.—The Chairman replied at length to Mr. Jackson, and begged to move, in the first instance, the resolution of the directors for the appointment of a committee.

Capt. PEARSON wished to know how much had been called up on the

shares.—The Chairman said about 371,400s., and the deficiency was about 99,000s.—Capt. PEARSON: How far have you liquidated by the calls.—The Chairman said that, to the 31st December last, the amount of calls received beyond 50s. per share was 329,000s., and the amount of debt paid off to that date was 215,771s., and of interest 62,169s.

A long conversation then ensued about the gentlemen who should be appointed on the committee, when Captain PEARSON, Mr. Drane, and Mr. Harding, were mentioned, but wished to be excused, on account of their intended absence from town.—Mr. RICHARDS and Mr. BROWNKNEVE said they would willingly resign, if others would take their places.—The following resolution was then carried unanimously—

That the following proprietors be appointed a special committee, to consult and arrange with the directors such scheme as may appear to them best to be adopted for discharging the liabilities of the company, and to report to a special meeting, to be called for that purpose by the directors of the company, not later than the 1st July next.—John S. Brownrigg, David S. Chapman, Samuel Hume, Samuel Hume, John Abel Smith, William Arthur Williamson, and George Probyn, Esqs., and the auditors of the company—viz., Charles Kerr, T. Watson, J. S. Smith, Esqs.

The resolution of Mr. Jackson was put and negatived, and a resolution of Mr. Whitechurch was also negatived.—The meeting then adjourned.

MOLD MINES COMPANY.

At the annual general meeting of the shareholders of this company, held at their offices, Colne, NEATHROP, in the chair, the minutes of the last meeting having been read, Mr. Taylor's report was laid before the meeting, which showed that, notwithstanding the depression in the market price of the ore sold, a profit of 773s. upon the year was made by the mines, and the foundry returns exceeded the amount of costs by 46s.; vigorous efforts were making to insure a deeper working of Pant-y-mwyn mine; sixty-seven fathoms of Taylor's shaft had been sunk and risen through during twelve months, and an excellent shaft thus obtained, which was then under the 100 fathom level. Taylor's engine-shaft had been sunk from the 100 to the 110 fathom level, upon the vein, which was of a very promising character. The 100 fathom level had been driven fifty-three fathoms, which is now sixty-seven fathoms; the eighty fathom level eighteen fathoms; and the south shaft had been sunk ten fathoms; other extensive works had been completed during the year, the returns for which period averaged 100 tons per month; some profit had been made, after paying off a large amount of increased cost, which had been incurred by the furnishing a new boiler, of large construction, to Taylor's engine, the old engine undergoing complete repairs, and a new changing-house, with drying tube, erected for the men. At Pant-y-barn and Fenny mines various trials had been proceeded with for developing these mines, from which a small return had been made. The following statement of costs and returns was laid before the meeting—

Mines.	Lead ore.	Costs.	Profit.	Loss.
100 fms.	Time.	£ s. d.	£ s. d.	£ s. d.
Pant-y-mwyn	1204	11,779 10 0	313 2 10	—
South Mold	130	907 11 11	519 10 4	—
Pant-y-barn	60	749 0 0	—	233 6 4
Royalty from small mines.	—	—	153 17 8	—
	1494	13,436 0 10	1006 18 2	233 6 4
		£773 10s. 3d.		

It was then resolved—That the reports and accounts be approved, printed, and circulated among the shareholders, and that the special committee for the disposal of Pant-y-mwyn foundry be re-appointed; and thanks having been voted to the chairman, the meeting separated.

TAFF VALE RAILWAY COMPANY.

A meeting of the shareholders in this undertaking was held at the Bush Inn, Bristol, on Wednesday, in consequence of the financial condition of the company, and other matters, much dissatisfaction has been felt by a portion of the proprietors, some of whom formed themselves into a committee, for the purpose of investigating the circumstances and prospects of the line; and it was by this body the meeting was convened. The chair was taken by J. HARRISON, Esq., the eminent economist of Rhylow Vale, who is a considerable shareholder in the company.—The Chairman having addressed the proprietors, a report from the committee of inquiry was read to the meeting, by its secretary, Mr. J. HARRISON, in which various grounds of complaint against the directors were alleged.—The committee seemed to be of opinion that the directors had been more mindful of their own interests than of those of the shareholders, and that they had sacrificed the latter to the former. They asserted that certain directors had, in spite of positive enactments to the contrary (in the 10th section of the Act of Parliament), contracted for the supply of articles to the company; that the chairman (Mr. John Guest) was carrying his goods over the line at 2s. per ton, while others were charged 7s. 6d., and even higher; that Mr. Cuffin (a director) had sold them had only, at high prices, that, while he was supplying them, a responsible person offered to do so at 20 per cent. less, which the directors refused; and, on Mr. Cuffin's refusing his price 13 per cent., continued the contract to him. The report further charged the directors with various acts for their individual advantage, and went on to say, "The general character of the management of this line may be summed up as follows—Disregard of economy—disregard of accounts—neglect of shareholders—indifference to cash transactions—half-yearly accounts incorrectly stated, showing a balance in hand when a loss should have appeared; also, exhibiting a partial view, not revealing the main features of the case—paying interest out of some fund, unknown and unexplained—directing making contracts with directors, in the case one in particular, of a most indefensible character—directors agreeing with directors, as in the Marbury tramroad case, to the extent of giving 25,000s. (less some old rails, and part of a fund) for nothing, to parties who (if a house had been given on either side) ought to have given 25,000s. to the company, for advantages conferred on them—making branches, without giving any protection to the company for their traffic—freights lowered at pleasure, by directors accommodating directors, who, in this respect, have already accommodated them." In financial matters, the committee complained of great misdeeds, and entered into statements to show that, after allowing for all that could be expected from authorized capital, the company was involved in liabilities to the amount of 25,000s.; and, if to this was added the sum allowed as assets yet to be recovered, and those required for the completion of the Porthcarn, Plymouth, Dowlais, and Rhyl branches, there would be a capital of 200,000s. yet to be raised—making, with the 147,000s. already expended, 347,000s.—A long and heated debate ensued as to the course which it was best to adopt, and it was agreed to print and circulate the report, and to hold another meeting soon thereafter.—A vote of thanks was passed to the gentleman who had introduced the inquiry, to the chairman, &c., and the meeting adjourned.

NATIONAL PROVINCIAL BANK OF ENGLAND.

The tenth annual general meeting of the proprietors was held at the office, Bishopsgate-street, on Thursday, the 11th inst., JOHN McFARLANE, Esq., in the chair.—The report stated that, in August last, the business of the respectable firm of Cohn, Heine, and Co., of London, had merged in the branch of the company established in that city; two new branches had been established—one at Tulse and the other at Newcastle, in Wales—the retirement of private establishments having made eligible openings at those places; it concluded by expressing the conviction of the directors in the stability of the undertaking, and that the public continued to show increased confidence in the establishment. The accounts were as follows—Undivided profits on January 1, 1883, 30,135s. 11s. 6d., and net profits of 1903, 23,824s. 11s. 6d., making a total of 53,960s. 11s. 6d.; from which dividend distributed, 10 per cent. for the year, 53,960s. 11s. 6d.—leaves the undivided profits as 17,100s. 11s. 6d., 22,075s. 11s. 6d.—The report and accounts were then unanimously adopted; J. McFARLANE, J. R. Tait, and W. H. Sharp, Esqs., who were out of office as directors, were re-elected.—Thanks were voted to the chairman, and the meeting separated.

PROVINCIAL BANK OF IRELAND.

The annual general meeting of the proprietors was held at the establishment, 43, Old Broad-street, on Thursday, the 10th inst., GEORGE FARRER, Esq., in the chair.—The annual preliminary business having been disposed of, the SECRETARY read the directors' report, which, after alluding, at considerable length, to the large supplies of agricultural produce afforded during the past year, stated that, in a review of the business done during that period, the past twelve months had not, upon the whole, been favorable to banking business, but they were, nevertheless, enabled to continue the year's dividend at the rate of 5 per cent. per annum. From the statement of accounts, it appeared the undivided profits at March 31, 1883, were 114,000s. 0s. 0d., which, by the payment of an extraordinary dividend, or bonus, of a per cent., amounting to 11,400s., and two ordinary dividends, of 2s. 6d. each, to Christmas last—making a balance of 40,000s. 0s. 0d., to which add the net profits for the year, to March 31, 1883, (less the bonus last), 67,200s. 0s. 0d., gives a total of undivided profits of 107,200s. 0s. 0d., out of which they recommended a dividend of 5 per cent. for the half year, payable on the 15th July next.—The report and accounts were then adopted, thanks were voted to the chairman and directors, and the meeting broke up.

Mr. FARRER—A most beautiful specimen of industrial method, from Rhylow, was sent in to the establishment of Mr. Tait, the secretary, to the bank. It is about twenty inches in diameter, finely polished, and the color and figure is, in the extreme case, most perfect. We are informed that, in the year 1880, 1881, was offered for sale a specimen of the natural world; but, whatever use may now be found in its value, it would certainly add a little to our collection in the world.

FEMALE LABOUR IN COLLIERIES.

The moral barrier which the excellent bill of Lord Ashley, for the emancipation of females from the degrading and brutalizing effects of their labour in mines, threw around the coal districts, has been attempted to be broken through; but the invidious attack, we are happy to say, has signally failed. We noticed in the Journal, some weeks since, that some of the "black diamond nabobs" of the north, and especially in Scotland, were on the alert to effect an amendment (?) of the new Collieries Act; and, after every preparation for the purpose, such as putting up evidence and correspondence to meet their views, with a few compulsory petitions from females, to be allowed to go to work again in the mines, their champion (Mr. C. Bruce, the Member for Eglam and Nairn shires) made a bold stand in the House, on Tuesday last, and moved for leave to bring in a bill "to amend an Act of the 5th and 6th of Victoria I., for regulating the employment of persons in mines." He considered the Mines and Collieries Act a very hasty and injudicious measure, and had been productive of great distress, by throwing numbers out of employment. He did not wish to interfere with the Act, as far as related to married women and young girls; but he wished widows and girls over eighteen years of age to be permitted to work in the mines, if they preferred it to other employment, or when (which was nearly always the case with females who had worked in mines) they could not obtain a living in other ways. In a long speech, he attempted to rebut the evidence adduced before the committee of inquiry on the subject, and stated that the accounts of girls drawing waggons through mud and water, like beasts of burden, and the men being nearly naked, was all exaggeration and invention; and, in conclusion, would even consent to the sheriff of the county having the power to grant licenses for the employment of women, and to withdraw them on good ground being shown.—Capt. Lockhart (Member for Lanarkshire) seconded the motion.

Lord Ashley, in an able speech, opposed the bill. He contrasted the number of females thrown out of employment, by his bill—which was so dwelt upon by the mover—with the number of men and boys who had taken their places; and he read a variety of letters from the coal districts, which evidently evinced the feeling of delight with which the news of their emancipation was felt by all the females, particularly the younger girls, scores of whom have been received into families, as servants, and bid fair to turn out very different members of society to what they could have been by remaining in the brutalizing atmosphere of the mine. The parents are cheerfully taking back their children, saying they had long grieved to see their daughters the slaves of a few overgrown unfeeling men. An evidence of the feeling entertained, it may be mentioned that one female, with two daughters, hardly knew how to give expression to her joy; the husband had formerly spent the greatest part of all their earnings in drunkenness, and used to beat them most unmercifully; but being thrown on his own resources had taught him to reflect, and the home, which was formerly a "hell," had now become a comparative paradise. Similar instances, however, are detailed, from all parts of the coal districts. He then alluded to the petitions of the poor women, which he showed were compulsory, by threats of leaving them to want, misery, and destitution, being held up; and, respecting one from between 200 and 300 Scotch ladies (?), said he was happy to know that no such petition emanated from English females. In conclusion, he said No!—emphatically No!—to the motion.

Sir Jas. Graham, Lord F. Egerton, Lord Dunsannon, Mr. Brotherton, Mr. Hindley, and Mr. Ald. Thompson, opposed the motion; the latter saying, that, in South Wales, with which district he was connected, the employing females in mines and collieries was utterly unknown, and he believed that the people in that part of the country would submit to ten times the misery and distress they are now suffering under, rather than permit their wives and daughters to engage in such degrading labour.—The House divided, when there appeared—For the motion, 23; against it, 137; leaving a majority in favour of humanity of 114.

In their anxiety to make out a case, the mover and seconder attempted to prove too much. Mr. C. Bruce tried to convince the House that the horrors exposed by the commission of inquiry were all imaginary; that working in coal mines was most easy; that the roads for the waggons were kept quite smooth, clean, and dry, instead of being up to the ankles in wet; that these waggons were never drawn above nine yards, instead of 400, as stated in evidence; he said they had plenty of time for their meals, and that both men and females were most decently dressed at their work in the mines, the cross of the former only being exposed; and Mr. Lockhart said that one woman told him she never knew what health was until she engaged in coal-pit labour. These barefaced exaggerations speak for themselves; and we sincerely hope that every selfish attempt to legislate for the few—merely on account of the difference of pay between male and female labour—at the expense of every moral consideration, may meet with the deserved fate of Mr. C. Bruce's motion, for a bill to amend the most humane Act that ever passed the British Legislature—Lord Ashley's Mines and Collieries Act.

COOKE'S ELECTRIC TELEGRAPH.

At the Society of Arts, on Wednesday evening last, a paper was read by Mr. Winkshaw (the secretary) descriptive of the improved electric telegraph, as used for nearly two years on the Blackwell Railway, and now fitted up in a most substantial manner between Puddington and Slough—a distance of eighteen miles on the Great Western Railway. Though the principle remains as first invented by Mr. Cooke, he has been indefatigable in carrying out improvements to simplify the working of the apparatus, and words, sentences, and numbers to any extent can now be communicated with the utmost rapidity by the use of only two index hands—five having formerly been employed. The cost under the system first adopted, that of laying insulated copper wire in iron tubing, was found not only expensive in the first instance, being as much as 250s. per mile, but most difficult, in case of damage, to ascertain the precise spot, notwithstanding metal boxes were placed on the tubing at certain distances, and an instrument called a detector invented, by which they could discover which side of a box the disarrangement took place, even then it was very inconvenient to repair; the plan now adopted is by fixing strong posts at every 400 or 500 yards, armed with hooks, earthenware pulleys, winding racks, &c., and between these, standards of lighter and elegant dimensions, so that the series of wires employed, are carried along at about eight feet from the surface of the line, in regular and parallel rows, drawn tight by the racks, and have a very pretty effect from the road, these posts and standards are well painted, and the wires, wherever they touch the supports, are carefully protected from damp, which would carry off the electric current into the earth, and thus stop the signal; this plan is considerably more economical, and every wire can be distinctly seen, and should any breakage or accident happen it can be readily discovered and repaired. The index-plate on which the hands work, has on the upper part the five vowels (A E I O U), and on the lower part the semi-vowels (W and Y), and beneath each of these are placed two or three consonants, so that the whole alphabet is exposed to the points of the index, and so simple in the arrangement, that Mr. Winkshaw stated that any person of common capacity could become master of these signals in one day, and he mentioned as an instance of a youth who was perfectly competent to work them with rapidity and accuracy after about two hours' practice.—Two handle-branches move these index hands in any direction; while they remain perfectly perpendicular (in which position they point to no letter), the electric circle is broken, but, on moving the index point to any letter, the conducting wires are pulled, and instantaneously the hand at the terminal of the wire, through (on the Great Western Railway) eighteen miles distant, points to the same letter. A code of signals is established, by which certain letters signify whole sentences in common use on railways, by which means the almost rapidity of communication is insured, but a communication of any length might be carried on by perfect strangers, by spelling every word, so fast as the same could be written. A model of the apparatus was laid in the lecture-room, and communicated to an Indian in another part of the premises, by which signals were passed, and conveyed every one present of the great perfection and simplicity of the apparatus, which was further illustrated by diagrams.

STURGEON-GENERAL FRASER—INTERESTING TO GEOLOGISTS.—We have, by the Glasgow steamer, that for some months back a great mass of the granite of the Galloway district, and its population, recently been discovered in that locality. Immense quantities of large old trees are dug up daily; indeed, the apparent quantity of timber already discovered is rather surprising. A large pile of oak, spruce, and other trees bearing marks of human improvement, clothes the mountain. The amount of granite and other rocks seen in circulation in France is estimated, upon the Courcier's map, at 2,000,000,000.

Newcastle and Birmingham Railway.—The contracts for the remaining portion of this important line to Scotland were taken Thursday week by two contractors. Mr. James Hay was the successful competitor for the Ayrshire contract, nearly at auction, for £5,000,000; Mr. William Hutchinson obtained the Birmingham and Gloucester contracts—a distance of approximately 74 miles miles and a half, for £1,200,000. Both contractors are experienced men in railway construction, and are well able to bring any amount of force that may be requisite to complete these portions of the line nominated to their care. The capital account was only obtained to the Act on the 11th day of April last, and yet within the brief space of five weeks anything less than a determination proved forward that the contracts for every yard of line have been let. We believe there is no parallel to this in railway history. The shareholders will at once recognise in this the working energy of Mr. Hudson, chairman of the company. —*Yorkshireman.*

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